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VILSON, J.M.		
ANDERSON, G.A.	X	
HOLLOWAY, L.	X	

Mr. Joe Schieffelin, Unit Leader
Hazardous Waste Control Program
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, Colorado 80222-1530

Dear Mr. Schieffelin:

This letter is in response to the Colorado Department of Public Health and Environment letter, dated July 13, 1994, regarding about data quality concerns pertaining to the Mobile Soil Gas Laboratory Analytical Methods used on the OU10 Soil Gas Project. The following information addresses your concerns:

Issue No. 1

Concern that the data being generated is of unknown precision and accuracy and that continuing calibration check compound percent relative standard deviation (RSD) values have an acceptability of ± 50 percent while typical performance criteria for methods such as the Environmental Protection Agency (EPA) 8260 and 524.2 are 30 and 20 percent respectively.

Response

We believe that the data are of known precision and accuracy. All of the quality control (QC) parameters for this work are precisely detailed in the enclosed Standard Operating Procedure (SOP), and these have been carefully fulfilled for all work to date. All of the QC data required in the SOP have been generated for work completed to date. The QCs include Daily Reagent Blanks, Daily Calibration Standards, Internal Standard and Surrogates, Duplicate Analysis, etc.

The RSD requirements for calibration check compounds (CCC) and systems performance check compounds (SPCCs) are 50 percent RSD (as opposed, for example, to 30 percent RSD for EPA Method 8260). The data quality objectives for this project were identified as EPA Level II. This data quality level is designed for analytical support of field activities using transportable equipment and field analysis. This type of data is generally specified for the placement of additional sample locations, site characterization, evaluation of remedial alternatives, engineering design, and monitoring during implementation.

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The acceptable percent RSD of the CCCs used in the evaluation of an initial calibration, and the relative percent difference (RPD) of these compounds in the continuing calibration analysis were set at ± 50 , in accordance with the goal of Level II data quality. This percent of RPD was selected to allow for fewer reruns under field conditions requiring rapid turnaround of large numbers of samples, and to allow for variations resulting from trap/desorption procedures compared to Methods 8260 and 524.2. The QC criteria employed for these soil gas analyses is more stringent than the minimum requirements of Level II data. The mobile laboratory is using a mass spectrometer (MS) for detection instead of a photoionization detector/electron capture detector employed in a similar Rocky Flats Soil Gas Method alternative. The MS detector provides positive identification of the target analytes and better compound resolution capability than other detectors. Therefore, there is much higher level of assurance that compounds reported are correctly identified. The MS is turned each day to ensure that the correct ions are identified. Internal standards are introduced into each sample to adjust the sample responses for individual sample introduction variations. Surrogate standards are introduced into each sample tube to detect variations in sample desorption. Initial three point calibration and a daily single point calibration are used for the calculation of the compound response factors used in the quantification of sample analytes.

Issue No. 2

Concern that the use of a ± 50 percent RSD value for initial and continuing calibration compounds indicates that the control of the method is dubious and that the odds are 50/50 the low concentration compounds will not be detected.

Response

The acceptance criteria for the initial and continuing calibration of ± 50 percent was set in accordance with the data quality objectives of the study. All of the actual CCC and SPCC data are being produced and provided with the soil gas results. For most of the calibration runs, most of the calibration compounds do have RSD values significantly less than 50 percent, and none exceed 50 percent, indicating that control of the analysis is well established with defined parameters.

The detection limits for compounds targeted in this soil gas study (defined at the 99 percent confidence level by 40 Code of Federal Regulations (CFR) 136 Appendix B) are far below the 1 microgram per liter (ug/l) required in the work plan. A complete Method Detection Limit (MDL) study according to 40 CFR 136 Appendix B showed almost all compounds had 99 percent confidence level detection limits calculated from seven replicate analyses in the range of .01 to .03 ug/l as determined by signal to noise ratio, and the method detection limit was shown to be far below .5 ug/l by signal to noise ratio. Level II data quality does not require 99 percent confidence level detection limit according to 40 CFR 136 Appendix B.

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We believe our control of the soil gas analysis for this project has met or exceeded the detailed control requirements in the SOP, and meets the data quality objectives of soil gas studies. Any calibration and individual sample analysis which has not met the project QC specifications were reanalyzed.

Issue No. 3

Request for a Method Development and Validation "report," detection limit study and methodology, quality assurance processes and schedule.

Response

We believe that the performance characteristics of the method, including the QC, method detection limit in accordance with Level II requirements, and quality assurance process, are fully defined in the information we have provided.

If you have any questions regarding this matter or require additional information, please contact Regina Sarter at 966-7252.

Sincerely,


Steve Slaten
IAG Project Coordinator

Enclosure

cc w/o Enclosure:
F. Lockhart, ER, RFFO
R. Sarter, ER, RFFO
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